REMARKS

Status of the Claims

Claims 7-19 and 20-22 are pending. Claims 7-19 are currently withdrawn from consideration.

Claims 20-22 have been added. These claims contain no new matter and are fully supported by the application as filed. For the most part, claims 20-22 recite the features of original claim 1 in combination with, respectively, original claims 4, 5, and 6.

The above amendment cancels claims 1 and 4-6.

Withdrawn claim 12 has been amended to correct a typographical error.

Present Invention and Supporting Declaration

Before discussing the rejections and specific claims of the present application, Applicant believes it to be beneficial to review the features and advantages of the claimed invention to place the discussion of the rejections and claims in the proper context. To aid this discussion, a Declaration submitted under 37 C.F.R. § 1.132 by Yasuyuki Goto, the first named inventor of the claimed invention, is attached to this Response.

The present invention can provide a phosphorus-containing organic compound for forming a smooth-surfaced electron-transporting layer of an organic electroluminescent element on an underlying organic film by a wet method using alcohol without damaging the underlying organic film. See Specification at page 4, line 29 to page 5, line 4.

That is, according to the present invention, an organic electroluminescent element is manufactured by the wet method by forming an electron-transporting layer on a hole-

transporting layer, which itself is formed of an organic compound that is insoluble in alcohol. The wet method employed uses the electron-transporting material in solution with alcohol. Since the underlying hole-transporting layer does not dissolve in the alcohol used to form the overlying electron-transporting layer, it is possible to form the electron-transporting layer on the underlying organic film by the wet method without damaging the underlying organic film. As a result, the organic compound layer can have a uniform quality and can be free from pin-holes, making it possible to manufacture a long-life organic electroluminescent element that provides excellent luminescence at low voltage. See Specification at page 7, line 17 to page 8, line 8. This feature is not taught or suggested by the reference cited in the Office Action, and therefore the claimed invention is not obvious in light of those references.

Additionally, assuming a *prima facie* case of obviousness could be made against the claimed invention, the claimed invention is still patentable due to the surprising and unexpected results it exhibits compared to the devices disclosed in the references cited by the Office Action. These superior and unexpected results are discussed in the attached Declaration, and include uniform and pin-hole free layers, a long-life of light emission, and excellent luminescence at low voltage. See Application at p. 7, line 17 to p. 8, line 8; Declaration at para. 7, 9, 10, and 12. Manufacturing by the wet methods is also less expensive than manufacturing by dry methods. *Id.* at para. 11.

Issues Under 35 U.S.C. § 103

I. Claims 1 and 4 remain rejected under 35 U.S.C. § 103(a) as being allegedly obvious over U.S. 5,811,834 ("Tamano") in view of WO 03/046108 ("Doi"), where U.S. 2005/0106413

("Tanaka") is used as the English equivalent. This rejection is moot in light of the above amendment that cancels claims 1 and 4. However, the following comments show that the rejection does not anticipate or render obvious newly added claims 20-22.

The Office Action asserts that Tamano discloses a light-emitting, phosphorus containing, organic compound for use in organo-electroluminescence devices, which may be made using a wet method with ethanol. See Office Action at para. 18. Tamano discloses a device made by sandwiching a light emitting layer and hole injecting layer between an anode and a cathode. *Id.* On the other hand, the Office Action has acknowledged that Tamano fails to disclose or suggest an alcohol insoluble electronically conductive polymer that can be used as a hole injection layer. See Office Action at para. 19. Tamano also fails to disclose or suggest a device that can be manufactured by first forming an alcohol insoluble hole transporting layer, and subsequently forming an electron transporting layer "on the hole transporting layer by the wet method using alcohol." See claims 20 and 21. Furthermore, Tamano acknowledges that to "improve the film formability and preventing the occurrence of pinholes, the [ethanol] solution… may contain a proper resin and a proper additive." See Tamano at col. 25, lines 11-26. This evidences that, unlike the claimed invention, Tamano is susceptible to the well-known issue of pinholes, in part because it does not comprise "an electron-transporting layer formed on the hole-transporting layer by a wet method using alcohol."

Tanaka, the secondary reference, fails to cure all the deficiencies of Tamano. It appears the Office Action cited Tanaka only for allegedly disclosing a hole injection layer composed of PEDOT:PSS. See Office Action at para. 20. Therefore, Tanaka still fails to teach or suggest a device wherein the electron transporting layer is made on the hole transporting layer by the wet

method using alcohol, which is one of the features of the claimed invention that allows it to be pin hole free and manufactured at relatively low costs.

To establish a *prima facie* case of obviousness under § 103, the cited reference or combination of references must teach or suggest each and every claim limitation found in a claim against which the reference or combination of references is cited. See, e.g., MPEP §§ 706.02(j) and 2142. As discussed above, neither Tamano nor Tanaka include any teaching or even suggestion with respect to an electroluminescent element comprising "an electron-transporting layer formed on the hole-transporting layer by a wet method using alcohol," as recited in claims 20-22. Therefore, Tamano in view of Doi, where Tanaka is used as the English translation, do not establish a *prima facie* case of obviousness against claims 20-22.

Additionally, one of ordinary skill in the art would not have looked to combine the teachings of Tamano and Tanaka to arrive at the present invention. Tamano, as discussed above, discloses that its invention is susceptible to pin-holes. See Tamano at col. 25, lines 11-26. Tanaka has been cited in the Office Action only for the position that "PEDOT:PSS decreases the drive voltage and improves the hole injection efficiency of the electroluminescent device." See Office Action at p. 9, para. 20. Therefore, one of ordinary skill attempting to resolve the pinhole issues of Tamano would not have looked to Tanaka's teaching regarding PEDOT:PSS, because PEDOT:PSS alone would not reduce the occurrence of pinholes.

Accordingly, claims 20-22 are further believed to be allowable.

II. Claims 1 and 4 remain rejected under 35 U.S.C. § 103(a) as being allegedly obvious over JP2004-095221 ("Murase") alone, and Murase in view of WO 2005/073340 ("Spaochak"). This

rejection is moot in light of the above amendment that cancels claims 1 and 4. However, the following comments show that the rejection does not anticipate or render obvious newly added claims 20-22.

The Office Action asserts that Murase allegedly discloses an electroluminescent device comprising an anode, a cathode, a hole transporting layer, which may be made of NPD, and an nonionic phosphine compound that can form an electron transporting layer by a wet method. The Office Action acknowledges that Murase fails to disclose a device comprising the applicant's claimed invention. See Office Action at p. 11, para. 26. Spaochak, the secondary reference, fails to cure the deficiencies of Murase because Spaochak was cited only for allegedly disclosing certain electron transporting compounds containing diphosphines. See Office Action at para. 13 and 31. Therefore, Murase, alone or in view of Spaochak, fails to teach or suggest "an electron-transporting layer formed on the hole-transporting layer by a wet method using alcohol." See claims 20-22.

To establish a *prima facie* case of obviousness under § 103, the cited reference or combination of references must teach or suggest each and every claim limitation found in a claim against which the reference or combination of references is cited. See, e.g., MPEP §§ 706.02(j) and 2142. As discussed, Murase alone or in combination with Spaochak fails to teach or suggestion at least an electroluminescent element comprising "an electron-transporting layer formed on the hole-transporting layer by a wet method using alcohol," as recited in Claims 20-22. Also as discussed above, this nonobvious feature is what, *inter alia*, allows the claimed invention to achieve superior and unexpected results compared to the devices disclosed in

Murase and Spaochak. Therefore, Murase alone or in combination with Spaochak fails to establish a *prima facie* case of obviousness against claims 20-22.

III. Claims 1 and 4-6 remain rejected under 35 U.S.C. § 103(a) as being allegedly obvious over JP 2003-317965 ("Matsuura"). This rejection is moot in light of the above amendment that cancels claims 1 and 4-6. However, the following comments show that the rejection does not anticipate or render obvious newly added claims 20-22.

The Office Action asserts that Matsuura discloses electroluminescent devices optionally comprising an anode, a cathode, and a hole transporting layer, composed of NPD, and an electron transporting layer found between the two electrodes. See Office Action at para. 34. The Office Action also asserts that Matsuura's electron transporting layer may be formed by spin coating and be composed of a nonionic phosphine compound. *Id.* The Office Action acknowledges that Matsuura fails to disclose compounds that read on Applicants' formulas (2) and (3). See Office Action at para. 35. Furthermore, Matsuura also fails to disclose "an electron-transporting layer formed on the hole-transporting layer by a wet method using alcohol," as recited by Claims 20-22.

To establish a *prima facie* case of obviousness under § 103, the cited reference or combination of references must teach or suggest each and every claim limitation found in a claim against which the reference or combination of references is cited. See, e.g., MPEP §§ 706.02(j) and 2142. As discussed above, Matsuura fails to include any teaching or even suggestions with respect to an electroluminescent element comprising "an electron-transporting layer formed on the hole-transporting layer by a wet method using alcohol," as recited in Claims 20-22, which

allows the claimed invention to achieve the superior and unexpected results discussed above. Therefore, Matsuura does not establish a *prima facie* case of obviousness against claims 20-22.

Additionally, the Matsuura reference teaches away from using the wet method. Specifically, while Matsuura discloses that spin coating, albeit not with alcohol, is possible, Matsuura discloses that vacuum deposition is preferable in order to reduce the occurrence of pinholes. See Matsuura at para. [0099] and [0016]. This is in stark contrast to the claimed invention, which is capable of manufacture by the wet method with alcohol without the typical occurrence of pinholes. See, for example, Declaration and Exhibit 1.

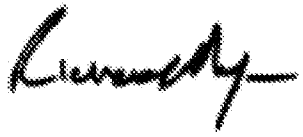
Accordingly, claims 20-22 are further believed to be allowable.

In sum, because at least the "electron-layer formed on the hole-transporting layer by a wet method using alcohol" feature recited by claims 20-22 is not taught or suggested by Tamano, Tanaka, Murase, Spaochak, Matsuura, or combinations thereof, the claimed invention is not obvious. The claimed invention is further believed to be patentable in light of its superior and unexpected results compared to the devices of the cited references, which are discussed more fully in the attached Declaration.

Therefore, from the foregoing this application is believed to be in condition for allowance.

If the Examiner has any questions concerning this election or the Application in general, he is respectfully requested to contact the undersigned at the number listed below.

Respectfully submitted,



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